UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARVIN I. FREDBERG,
PETER H. SHEAHAN,
SHARON A. ELSWORTH,
KAICHANG CHANG,
KEVIN O'DONNELL and
BRIAN CAVENER

Appeal 2007-1889
Application 10/621,155
Technology Center 2800

Decided: November 29, 2007

Before BRADLEY R. GARRIS, PETER F. KRATZ, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-24. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellants claim a radome or feedome comprising at least one rigid panel including composite material having polyester-polyarylate fibers in a rigid resin matrix material. Appellants also claim a method of producing such a radome or feedome.

Representative claims 1, 6, and 11 read as follows:

1. A radome or feedome comprising at least one rigid panel including composite material having polyester-polyarylate fibers in a rigid resin matrix material.

6. A radome or feedome of claim 1 in which the rigid resin matrix material is polyester.

11. The radome or feedome of claim 1 in which the polyester-polyarylate fibers are between 100 denier and 5000 denier.

The references set forth below are relied upon by the Examiner as evidence of obviousness:

Greene	4,506,269	Mar. 19, 1985
Coffy	5,360,503	Nov. 1, 1994

All appealed claims are rejected under 35 U.S.C. § 103(a) as being unpatentable over Greene in view of Coffy.

The Examiner finds that Greene discloses a radome having an outside skin made of polyarylate albeit without polyester-polyarylate fibers in a rigid resin matrix material as required by the appealed claims (Ans. 3). Concerning this distinction, the Examiner additionally finds that Coffy discloses a composite material comprising polyester-polyarylate fibers in a rigid resin matrix material and concludes that it would have been obvious for

an artisan to provide the radome of Greene with polyester-polyarylate fibers in a rigid resin matrix material in view of Coffy (*id.*).

Appellants argue that the applied references teach away from the here claimed invention (App. Br. 9-12) and are antithetical to one another such that they would not have been combined by an artisan in the manner under consideration (*id.* at 14).

For the reasons expressed in the Answer and below, we determine that the Examiner has established a prima facie case of obviousness with respect to each of the argued claims on appeal which Appellants have failed to successfully rebut with argument or evidence of nonobviousness.

The § 103 Rejection of the Appealed Claims Generally Including Independent Claims 1, 12, 13, 22, and 24

Only one of the Examiner's above-noted findings is disputed by Appellants. Specifically, Appellants disagree that Greene discloses a radome comprising a skin made of polyarylate. According to Appellants (App. Br. 9-10; Reply Br. 1-2), column 6 of Greene teaches that a number of skin materials were considered including polyarylate but ultimately polycarbonate was chosen as the optimum material for the particular radome application. Appellants argue that this column 6 disclosure "teaches away from using polyarylate in general whether it be in the form of fibers or otherwise in the design of a radome" (*id.* at 10). This argument is unpersuasive.

As correctly explained by the Examiner (Ans. 4-5), Greene not only discloses but in fact claims using polyarylate for making the outer skin of a radome (Greene, claims 1 and 4). The fact that Greene uses polycarbonate as the optimum material for a particular radome application (col. 6, ll. 31-37) does not teach away from using the polyarylate alternative construction material. This is because Greene's afore-noted disclosure does not criticize, discredit, or otherwise discourage the use of this polyarylate alternative. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Indeed, the undeniable fact that Greene claims polyarylate as an alternative material of construction directly and completely controverts Appellants' contention that Greene teaches away from the use of polyarylate in constructing a radome.

Appellants also argue that Greene "teaches away from using special fibers [i.e., polyester-polyarylate fibers] in a radome wall to minimize electrical losses by instead teaching balancing solid material with air to achieve a desired dielectric constant" (App. Br. 9; Reply Br. 2). This argument does not support a nonobviousness conclusion for a number of reasons.

First, this argument is based on the legally erroneous proposition that the teachings of Greene and Coffy must be combined for the reasons contemplated by Appellants (i.e., in order to reduce radio frequency loss; see claim 13). It is well settled, however, that, as long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor. *See In re Beattie*, 974 F.2d 1309,

1312 (Fed. Cir. 1992). Here, an artisan would have been motivated to provide the radome skin of Greene with polyester-polyarylate fibers in order to obtain the multiple advantages taught by Coffy (col. 3, ll. 15-39) even though these advantages may not be related to Appellants' goal of reducing radio frequency loss. In any event, we agree with the Examiner (Ans. 7) that an artisan would have been further motivated to so combine the applied prior art teachings based on a reasonable expectation of successfully reducing radio frequency loss in light of the fact that Coffy's composite material is disclosed as having "a remarkable transparency to electromagnetic waves" (col. 7, ll. 3-4). *See In re O'Farrell*, 853 F.2d 894, 904 (Fed. Cir. 1988).

In this latter regard and as previously indicated, Appellants believe that Greene teaches away from using polyester-polyarylate fibers in a radome skin in order to minimize electromagnetic losses because Greene achieves this goal with a different technique. However, we have earlier explained that the disclosure of a different or alternative technique for achieving a goal does not constitute a teaching away from other alternatives. *See Fulton*, 391 F.3d at 1201. The presence of different alternatives for reducing electromagnetic losses would have encouraged, rather than discouraged, use of the two techniques together (i.e., Greene's technique in combination with polyester-polyarylate fibers) in order to obtain their cumulative benefit.

Finally, Appellants seem to argue that the Examiner's obviousness conclusion is improper because Greene does not teach using fibers in the skin of Greene's radome (App. Br. 9-16). However, it is undisputed on this

record that it was known in the prior art to use reinforcing fibers in forming a radome skin as evinced by the prior art discussion of Greene (col. 2, ll. 54-65) and of Appellants' Specification (Spec. 1: 15-22). This evidence amply supports the Examiner's conclusion that it would have been obvious to provide the radome skin of Greene with the polyester-polyarylate fibers of Coffy in order to achieve their reinforcement function (and to achieve the reasonably expected reduction in electromagnetic loss as discussed previously).

The § 103 Rejection of Dependent Claims 5-10 and 16-20 Specifically

Appellants further argue that the combination of Greene and Coffy would not have resulted in a rigid resin matrix material different from the polyester-polyarylate fibers as required by the claims under consideration (App. Br. 16). According to Appellants, this is because "Coffy teaches a product consisting exclusively of one material to avoid alleged interface problems between fibers and a matrix having a different physiochemical natures" (*id.*). For multiple reasons, this argument is unpersuasive.

In the first place, contrary to Appellants' belief, Coffy does not teach a composite product consisting exclusively of one material. Instead, the composite material of Coffy is described as comprising reinforcing fibers and matrix of either the same chemical nature or natures which are very similar to one another (col. 2, ll. 5-9). Therefore, the fibers and matrix of Coffy may be different as long as they are very similar to one another. In

light of this disclosure, an artisan would have found it obvious to combine the polyester-polyarylate reinforcing fibers of Coffy with a very similar but different matrix material such as polyester or polyarylate, contrary to Appellants' belief.

Moreover, the artisan also would have found it obvious to combine Coffy's polyester-polyarylate reinforcing fibers with matrix materials which are not similar and which in fact have differing physiochemical natures leading to interface problems. This is because Coffy expressly teaches that it was known in the prior art to overcome such problems by using a third material known as a sizing agent (col. 1, ll. 30-39). We recognize that Coffy wishes to avoid the increased time and cost associated with using a third material (*id.* at ll. 40-43). Nevertheless, an artisan would have used the third material despite increased time and cost in order to obtain the ability to use a different matrix material that is more readily available and/or less expensive than one which is the same as or very similar too Coffy's polyester-polyarylate fibers.

The § 103 Rejection of Dependent Claims 11 and 21 Specifically

Appellants argue that neither Greene nor Coffy contains any teaching or suggestion of the specific range of denier values required by these claims. However, the uncontested fact that Coffy discloses the use of fibers in a matrix material in order to produce a reinforced composite evinces that fiber size or denier was recognized in the prior art as a result effective variable. It is generally considered that the determination of workable values for such an

art-recognized, result-effective variable would have been obvious. *See In re Boesch*, 617 F.2d 272, 276 (CCPA 1980). Therefore, we agree with the Examiner that it would have been obvious for an artisan to determine workable denier values for the polyester-polyarylate fibers of Coffy in order to achieve the desired reinforcing effect, thereby resulting in the here claimed denier values.

Conclusion

For the reasons set forth above and in the Answer, it would have been obvious for one with ordinary skill in this art to combine Greene and Coffy in the manner proposed by the Examiner. This is because the combination of familiar elements (i.e., Greene's radome skin material and Coffy's polyester-polyarylate fibers) according to known methods (e.g., as taught by Coffy) is likely to be obvious when it does no more than yield predictable results (e.g., a fiber reinforced matrix or alternatively a reduction in electromagnetic loss). *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (US 2007). We hereby sustain, therefore, the Examiner's § 103 rejection of all appealed claims as being unpatentable over Greene in view of Coffy.

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(vi)(effective Sept. 13, 2004).

AFFIRMED

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